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XRPX Acc No: N00-247413

Water-soluble semiconductor nanocrystals for emitting light in the visible and infrared energy range, comprises a nanocrystal core overcoated with a shell layer and an outer layer at the outer surface of the overcoating layer

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Number of Countries: 088 Number of Patents: 006
Basic Patent:

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WO 200017655	A1	20000330	WO 99US21375	A	19990917	200028	B

Priority Applications (No Type Date): US 99397436 A 19990917; US 98100947 P 19980918; US 98101046 P 19980918; US 98156863 A 19980918; US 98160454 A 19980924; US 98160458 A 19980924; US 99397428 A 19990917; US 99397432 A 19990917
Designated States (National): AE; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY; CA; CH; CN; CU; CZ; DE; DK; EE; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MD; MG; MK; MN; MW; MX; NO; NZ; PL; PT; RO; RU; SD; SE; SG; SI; SK; SL; TJ; TM; TR; TT; UA; UG; US; UZ; VN; YU; ZA; ZW
Designated States (Regional): AT; BE; CH; CY; DE; DK; EA; ES; FI; FR; GB; GH; GM; GR; IE; IT; KE; LS; LU; MC; MW; NL; OA; PT; SD; SE; SL; SZ; TZ; UG; ZW; AL; LI; LT; LV; MK; RO; SI

Abstract (Basic): WO 200017655 A1

NOVELTY - A water-soluble semiconductor nanocrystals comprises a semiconductor nanocrystal core of selected band gap energy overcoated with a shell layer of band gap energy greater than that of the core and with appropriate band offsets and further comprises an outer layer at the outer surface of the overcoating layer.

DETAILED DESCRIPTION - The water-soluble semiconductor nanocrystal comprises (i) a semiconductor nanocrystal core of selected band gap energy; (ii) a shell layer overcoating the semiconductor nanocrystal core which comprises a semiconductor material of band gap energy greater than that of the core; (iii) an outer layer which comprises a first portion molecule with at least one linking group for attachment to the nanocrystal and a second portion molecule with at least one hydrophilic group.

INDEPENDENT CLAIMS are also included for the following:

(a) water-soluble semiconductor comprising a semiconductor nanocrystal core of selected band gap energy and an outer layer with a first portion molecule of at least one linking group for attachment to the nanocrystal and a second portion molecule of at least one hydrophilic group;

(b) a water-soluble semiconductor nanocrystal comprising a semiconductor nanocrystal core of selected band gap energy, a shell layer overcoating the semiconductor nanocrystal core which comprises a semiconductor material of band gap energy greater than that of the core and a bilayer overcoating the shell which comprises an inner layer of affinity for the shell and an outer layer with a molecule having a hydrophilic group spaced apart from the inner layer by a hydrophobic

region adjacent to the inner layer; and

(c) a composition comprises a water-soluble nanocrystal dispersed or dissolved in an aqueous medium.

USE - To emit light in the visible and infrared energy range.

ADVANTAGE - The water-soluble semiconductor nanocrystals exhibit high quantum yields with photoluminescence emissions of high spectral purity, it is readily soluble and stable in aqueous systems and demonstrate chemical and electronic stability.

pp; 55 DwgNo 0/6

Title Terms: WATER; SOLUBLE; SEMICONDUCTOR; EMIT; LIGHT; VISIBLE; INFRARED; ENERGY; RANGE; COMPRISE; CORE; OVERCOAT; SHELL; LAYER; OUTER; LAYER; OUTER; SURFACE; OVERCOAT; LAYER

Derwent Class: A85; E19; E37; L03; S03; U11; X26

International Patent Class (Main): C09K-011/08; G01N-033/58

International Patent Class (Additional): C09K-011/02; C09K-011/55; C09K-011/56; C09K-011/62; C09K-011/64; C09K-011/66; C09K-011/70; C09K-011/74; C09K-011/75; C09K-011/88; C09K-011/89; H05B-033/10

File Segment: CPI; EPI

Manual Codes (CPI/A-N): A12-L03; A12-W12C; E05-G; E06-H; E07-H; E10-A03; E10-A05; E10-A07; E10-A09B2; E10-A10; E10-A19B; E10-A22; E10-A24B; E10-B02; E10-B03; E10-B04; E10-C01; E10-C02; E10-C04; E10-D03; E10-E03; E31-G; E31-H05; E31-K07; E31-L; E31-M; E31-P06A; E34-B04; E35; L04-A

Manual Codes (EPI/S-X): S03-E04D; S03-E14H; U11-A15; U11-B03; X26-J

Chemical Fragment Codes (M3):

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R043 0016-85802-K 0016-85802-M

Polymer Indexing (PS):

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003 018; R00351 G1558 D01 D23 D22 D31 D42 D50 D73 D82 F47; H0000; P0055 ; P8004 P0975 P0964 D01 D10 D11 D50 D82 F34; M9999 M2153-R; M9999 M2200; K9325

004 018; D23 D22 D75 D45 D11 D10 D12 D13-R D18-R D22-R D76 D77 D78 D42 D50 D51-R D52 D51 D60 D61-R F00 F07-R F34 F53 F54 F50 P- 5A O- 6A S- F35-R F05 F11 F70-R F72 F61 F63 F51 F26-R F04 F16 F24; H0260; P1081-R F72 D01; P8060 D01 D10 D12 D18 D19 D51 D59; P1490-R F61 D01 ; P1412 H0293 P0044 D23 D22 D41 D51 D56 D59 F07; P1503 H0293 P0044 D01 D23 D22 D43 D51 D56 D59 F00; P0964-R F34 D01; P1854; H0044-R H0011

005 018; ND01; Q9999 Q7476 Q7330; Q9999 Q8311 Q8264; Q9999 Q8355 Q8264; Q9999 Q9110; B9999 B3407 B3383 B3372; B9999 B3509 B3485 B3372; B9999 B5094 B4977 B4740; K9836 K9790; K9870 K9847 K9790; B9999 B3532 B3372; B9999 B4580 B4568; B9999 B4706-R B4568; B9999 B3225 B3203 B3190; B9999 B3350 B3190; B9999 B3521-R B3510 B3372

Derwent Registry Numbers: 1496-U; 1504-U; 1505-U; 1520-U; 1524-U; 1525-U; 1545-U; 1666-U; 1670-U; 1942-U; 2022-U

Specific Compound Numbers: R04198-K; R04198-M; R04508-K; R04508-M; R01505-K ; R01505-M; R01525-K; R01525-M; R06977-K; R06977-M; R08290-K; R08290-M; RA1RUV-K; RA1RUV-M; R01496-K; R01496-M; R01942-K; R01942-M; RA1RUX-K; RA1RUX-M; R06079-K; R06079-M; R01545-K; R01545-M; R11619-K; R11619-M; R11620-K; R11620-M; R03136-K; R03136-M; R03137-K; R03137-M; RA1RUY-K; RA1RUY-M; R04567-K; R04567-M; R13442-K; R13442-M; R10785-K; R10785-M; RA1RUZ-K; RA1RUZ-M; R01524-K; R01524-M; RA1RV0-K; RA1RV0-M; R01670-K; R01670-M; R01520-K; R01520-M; R01504-K; R01504-M; R10170-K; R10170-M; RA1RV1-K; RA1RV1-M; R02022-K; R02022-M; R03135-K; R03135-M; R01666-K; R01666-M; RA1M0D-K; RA1M0D-M; R20116-K; R20116-M; R05324-K; R05324-M; RA1438-K; RA1438-M; RA1RVP-K; RA1RVP-M

Generic Compound Numbers: 0016-85801-K; 0016-85801-M; 0016-85802-K; 0016-85802-M

Key Word Indexing Terms:

01 130045-0-0-0-CL 130121-0-0-0-CL 139835-0-0-0-CL 5119-0-0-0-CL 130590-0-0-0-CL 131123-0-0-0-CL 285185-0-0-0-CL 129415-0-0-0-CL 129416-0-0-0-CL 285188-0-0-0-CL 130320-0-0-0-CL 129539-0-0-0-CL 132402-0-0-0-CL 132403-0-0-0-CL 129751-0-0-0-CL 129752-0-0-0-CL 285189-0-0-0-CL 130169-0-0-0-CL 132822-0-0-0-CL 131423-0-0-0-CL 285190-0-0-0-CL 129545-0-0-0-CL 285192-0-0-0-CL 96038-0-0-0-CL 866-0-0-0-CL 1262-0-0-0-CL 131184-0-0-0-CL 285193-0-0-0-CL

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